Virginia Department of Behavioral Health & Developmental Services

# Urinary tract Infections (UTI's)

## in Individuals with Intellectual and Developmental Disabilities

**Developed by:**

**The Office of Integrated Health – Health Supports Network at The Virginia Department of Behavioral Health and Developmental Services (DBHDS)**

# Learning Objectives

- Identify the definition of what a urinary tract infection (UTI) is.
- List the different types of UTI's.
- Describe how are UTI's classified.
- Recognize risk factors associated with UTI's.
- Identify the causes of UTI's.
- State the signs and symptoms of a UTI.
- Describe when to get medical attention for a UTI.
- Explain how to obtain a clean catch urine sample.
- Identify dangers of undiagnosed UTI.
- Discuss various treatments for UTI's.

# The DBHDS Risk Management Review Committee

- One of their many focuses has been on urinary tract infections reported in the CHRIS system over a 12 month period between October 1, 2019 and September 30, 2020.
- They reviewed 327 cases of UTI in individual between the ages of 18 and 81 years old, and confirmed individuals with intellectual and developmental disabilities who are:
  - physical dependent on caregivers for toileting,
  - are of older age,
  - and of the female gender are at higher risk UTI.

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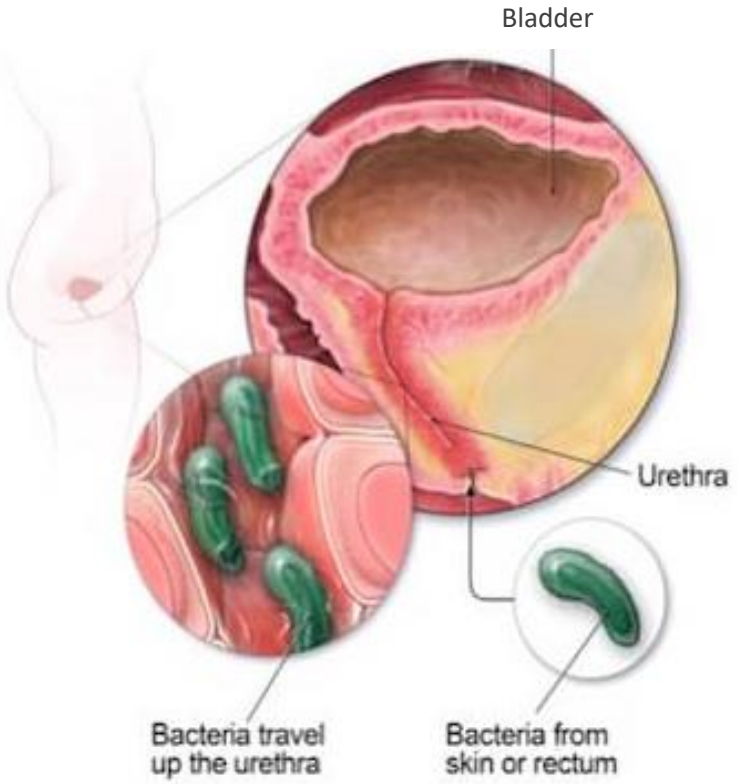
# What is a Urinary Tract Infection?

# What is a UTI?

- UTI's occurs when bacteria (disease producing microorganisms) enter into the urinary tract from the skin or rectum, and travel up the urethra to the bladder, producing an infection (cystitis) with symptoms.

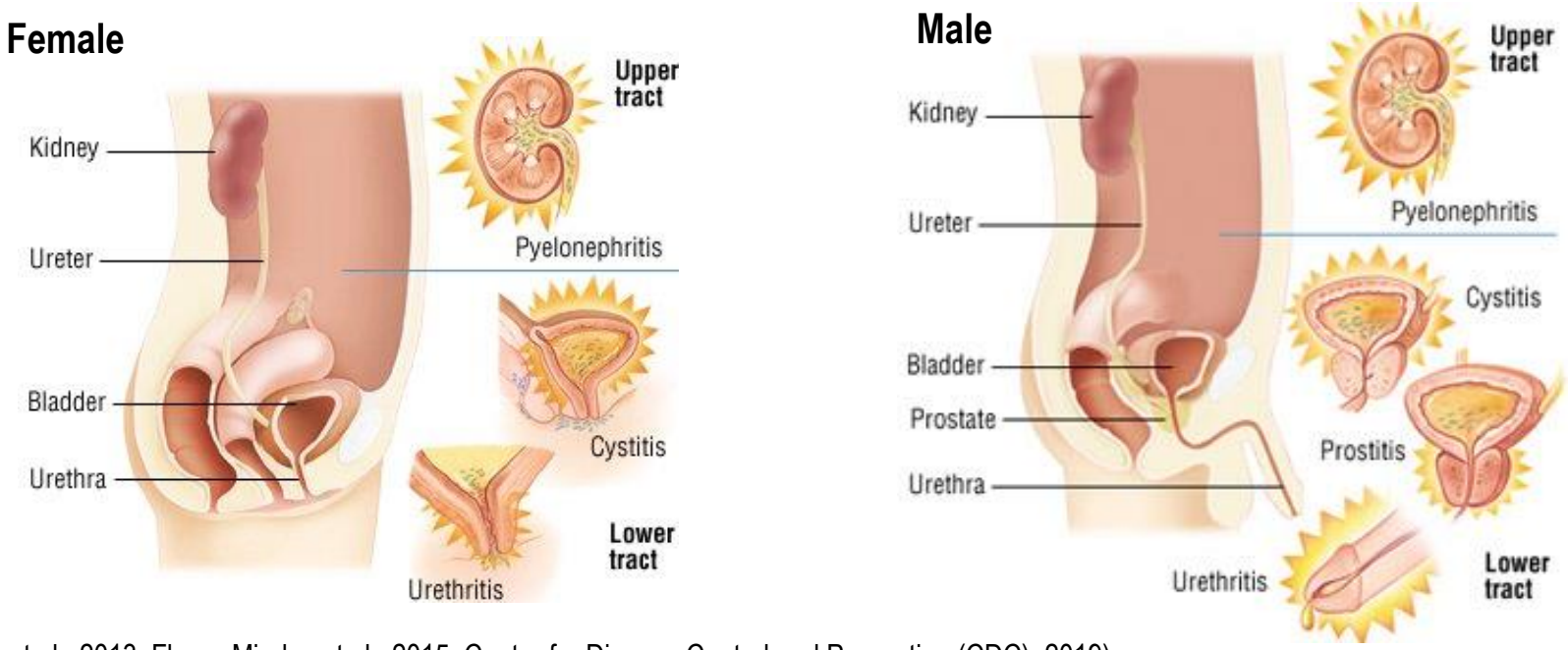
- Urinary tract infections (UTI's) are one of the most common infections treated by primary care physicians (PCP) in the world to date.




(Flores-Mireles et al., 2015; Lajiness and Lajiness, 2019).

# Introduction continued…

- The urinary tract is divided into upper and lower tracts.
- Cystitis is an infection within the bladder, and is the most common type of lower UTI.
- Urethritis is an infection with the ureters.
- Pyelonephritis is an infection within the kidneys.
- Pyelonephritis is more serious than urethritis or cystitis, but less common.




(Barber et al., 2013; Flores-Mireles et al., 2015; Center for Disease Control and Prevention (CDC), 2019).

# Types of UTI's

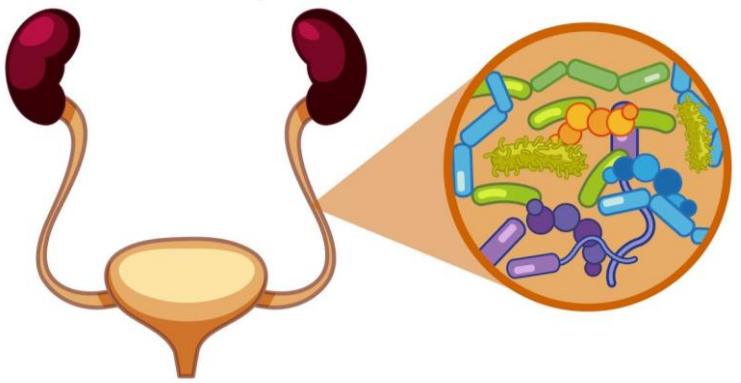
# Types of UTI's

- Uncomplicated.
- Complicated.
- Recurrent.
- Relapse.
- Catheter-associated (CAUTI's).


(Flores-Mireles et al., 2015; Lajiness and Lajiness, 2019).

# Types of UTI's

- **Uncomplicated UTI's** occur in healthy individuals with no known physical and or functional defects within their urinary tract.
- **Complicated UTI's** are associated with blockages or obstructions in the urinary tract. Blockages or obstructions may be related to:
  - An enlarged prostate in men.
  - A neurological disorder (i.e. multiple sclerosis), epilepsy cerebral palsy, diabetes or conditions which affect the spine.
  - Immune disorders.
  - Bladder or kidney stones.
  - Bladder or kidney tumors.



(Flores-Mireles et al., 2015; Lajiness and Lajiness, 2019).

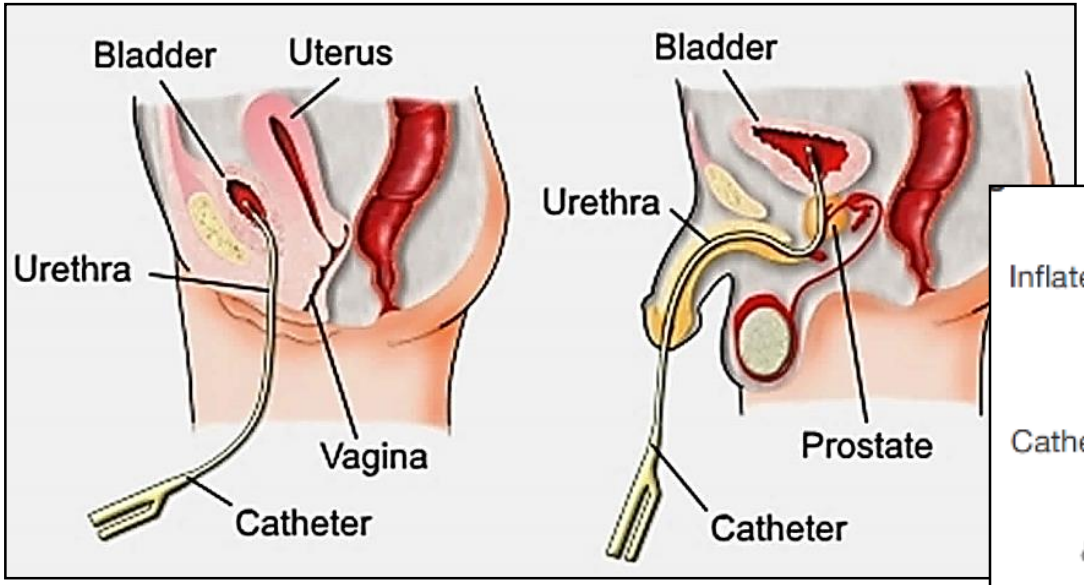
# Types of UTI's

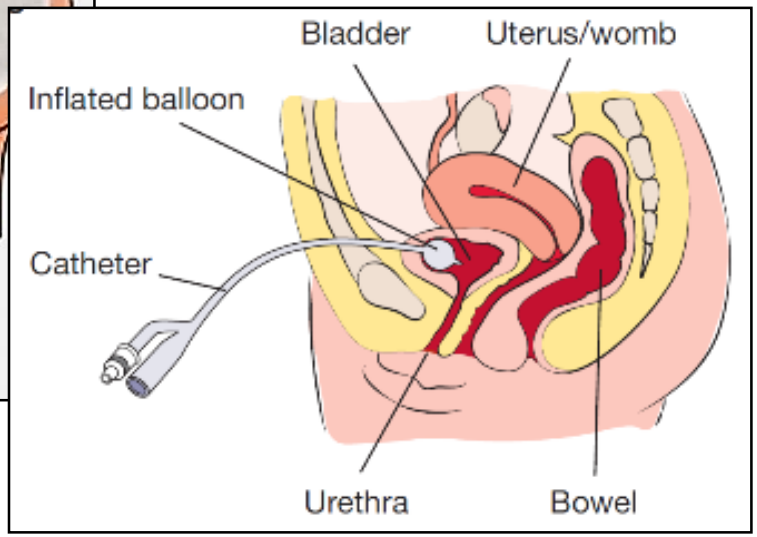
- **Recurrent UTI's** are described as at least 2 - 3 uncomplicated or complicated infections in a 6 month time period or 3 UTIs within a year.
- **Relapse UTI's** are infections which reoccur within the first two weeks of completing the initial antibiotic drug therapy for the first UTI.

(McLellan and Hunstad, 2016; Brubaker, Carberry, Nardos, Carter-Brooks, and Lowder, 2018; Lajiness and Lajiness, 2019).

# Types of UTI's

- **Cather-associated UTI's (CAUTI's)** occur when a person has an indwelling urinary or supra-pubic catheter and or has recently been catheterized in the past 48 hours.




(Lajiness and Lajiness, 2019).

# Risk Factors for UTI's

# Risk Factors Related to All Types of UTI's

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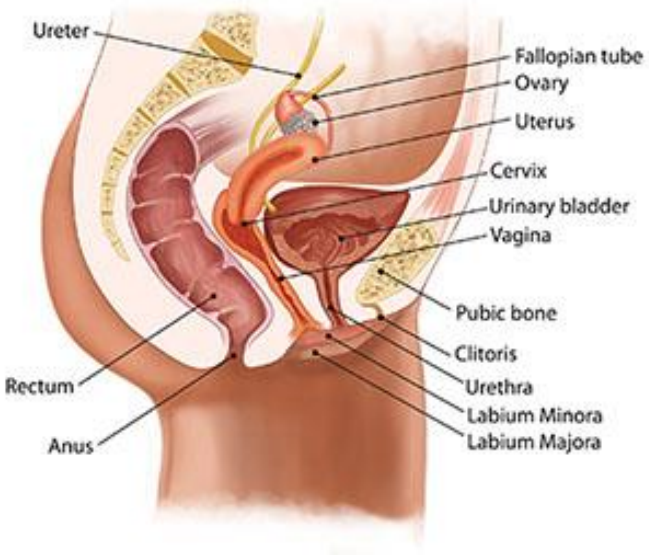
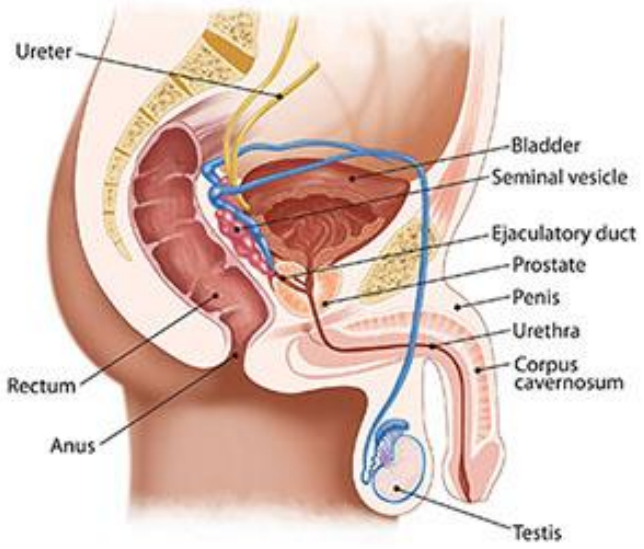
UTI's are more common in women and girls than in men because their urethra is shorter than males.

- A females urethra is approximately 4 inches in length, and closer to the rectum, where more bacteria exists and can easy travel into the urinary tract.




(McLellan and Hunstad, 2016; CDC, 2019; Belyayeva and Jeong, 2020).

# Risk Factors Related to All Types of UTIs continued…

- Previous UTI's.
- Family-related risk (a mother, sister, aunt, or grandmother with history of UTI's).
- Changes in a female's bacterial growth caused by medication used for vaginal infections, or during menopause.
- Age 65 years or older, with urinary incontinence, urinary retention, numerous hospitalizations and or institutionalizations.
- Diabetes (impaired insulin processing within the body).
- Neuropathy (incomplete emptying of the bladder due to diabetic-related nerve damage).

(Flores-Mireles et al., 2015; Nitzan, Elias, Chazan, and Saliba, 2015 McLellan and Hunstad, 2016; Cortes-Penfield et al., 2017; CDC, 2019).

# Risk Factors Related to All Types of UTI's continued…

- Men with an enlarged prostate or incomplete emptying of the bladder related to narrowing of the urethra.
- Young children being toilet trained, if not taught proper hygiene of wiping from front to back after bowel movements.
- Prolonged use of an indwelling urinary or suprapubic catheter and or having recently experienced urinary catheterization in the hospital or medical environment.

(Flores-Mireles et al., 2015; McLellan and Hunstad, 2016; Cortes-Penfield et al., 2017; Lajiness and Lajiness, 2019).

# Increased Risk for UTI's in Individual's with I/DD

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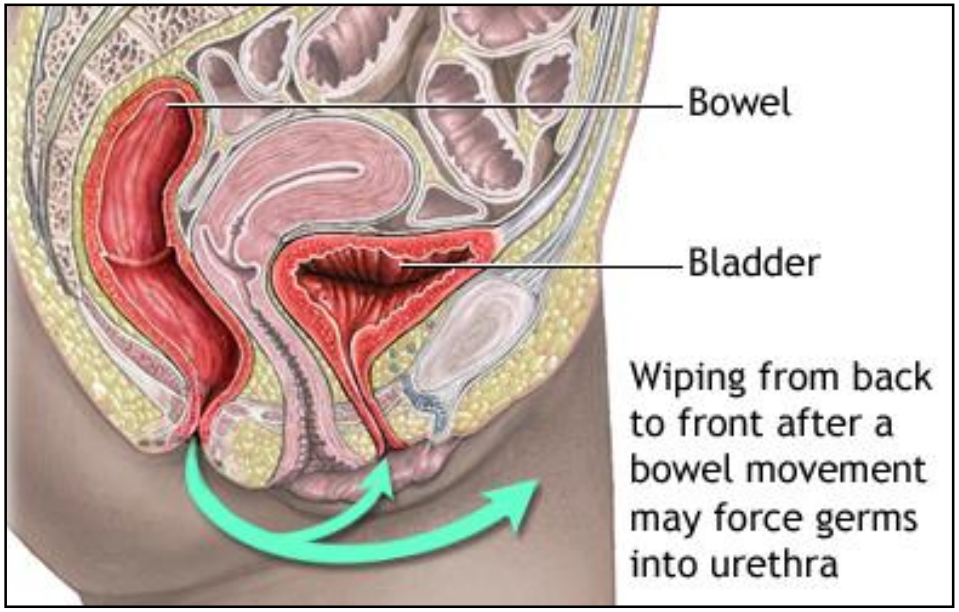
- Individuals with any intellectual and developmental disabilities (I/DD) are at higher risk for UTI's than the general population if they are:
  - An individual diagnoses of profound or severe I/DD.
  - An individual who is nonverbal, and or communicates without words.
  - An individual who has difficulty understanding and communicating abstract concepts such as pain and discomfort.
  - Individuals with physical disabilities who require assistance with toileting.
  - Individuals who are incontinent.

# Causes of UTI's

# Causes of UTI's

- UTI's are caused when bacteria enters the urinary tract.
- Feces from the rectum find their way into the urethra, which can occur when a female wipes her perianal area from the back to the front of the body.




This picture shows the **incorrect** way to wipe after a bowel movement.

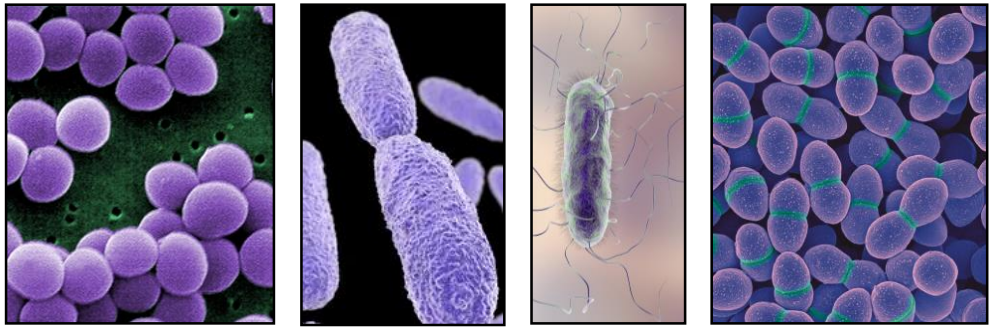
Proper cleaning of the perianal area after a bowel movement is to **wipe from front to back** away from the urethra.

(Flores-Mireles et al., 2015; CDC, 2019; Belyayeva and Jeong, 2020).

# Causes of UTI's continued…

- *Escherichia coli* (E. coli) is the most common bacteria found to cause UTI's in the community, accounting for greater than 80% of all diagnoses.

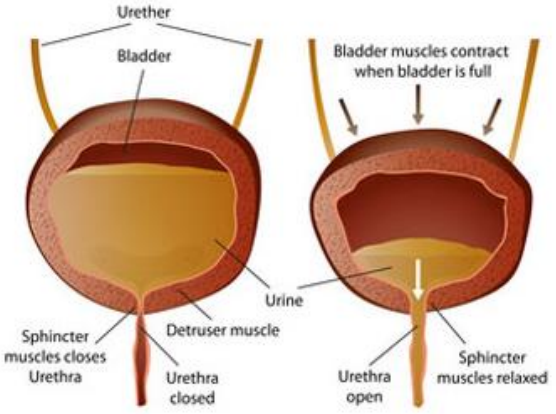
- Other pathogens such as *Staphylococcus*, *Klebsiella, Proteus,* and *Enterococcus* have mostly been identified in hospital acquired CAUTI's.

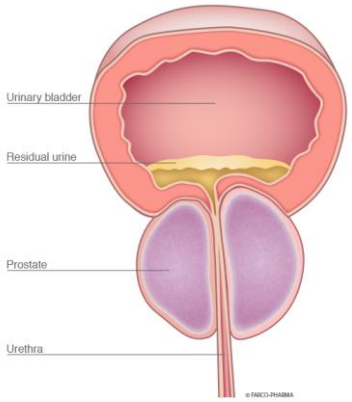


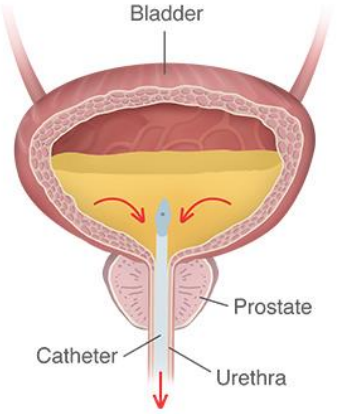
(McLellan and Hunstad, 2016; Mazzriol et al., 2017; Lajiness and Lajiness, 2019;Belyayeva and Jeong, 2020).

# Causes of UTI's continued…

- Urine that is left sitting in the bladder after urination is referred to as stagnant urine residual which provides an environment for bacterial growth.
- Stagnant urine residual happens when the bladder is not emptied completely during urination, leaving a small amount of left over urine.
- Treatment for stagnant urine residual is an in-out (straight) catheterization.
  - Catheterization is considered a sterile procedure requiring a nurse to perform under a physician's order.




(Lajiness and Lajiness, 2019).

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# Signs and Symptoms UTI's

# Typical Signs and Symptoms of UTIs

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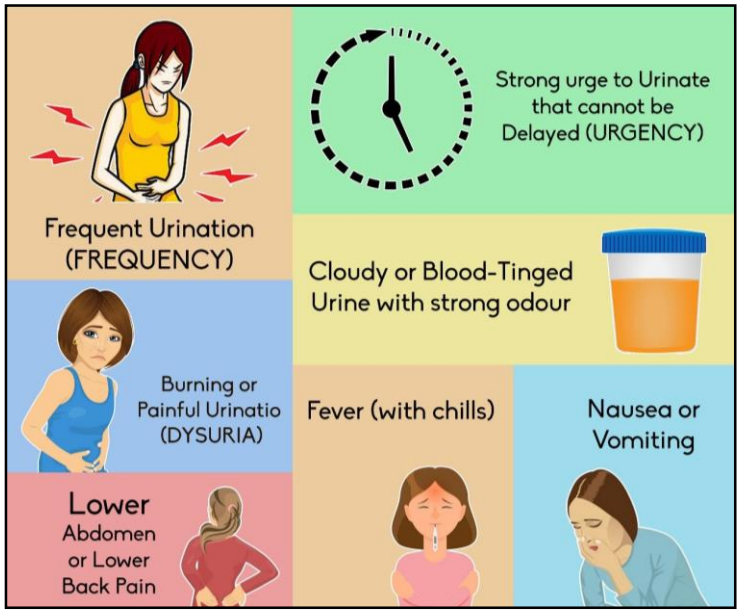
- Dysuria is painful or difficult urination which is a key symptom.
- The feeling of needing to urinate, even after emptying the bladder.
- Hematuria is the presence of blood in the urine.
- Malaise is generally feeling ill or weakness.
- Lack or loss of appetite.
- Irritability and agitation.
- Chills.
- Fever.
- Nausea or vomiting.
- Lower back pain or side pain.
- Frequent and urgent urination.
- New or worsening mental confusion.
- Nocturia is excessive urination at night.
- Pelvic pain is lower abdominal pressure, cramping or pain.




(Brubaker et al., 2018; CDC, 2019; Belyayeva and Jeong, 2020).

# Signs and Symptoms of UTI in Individual's with I/DD

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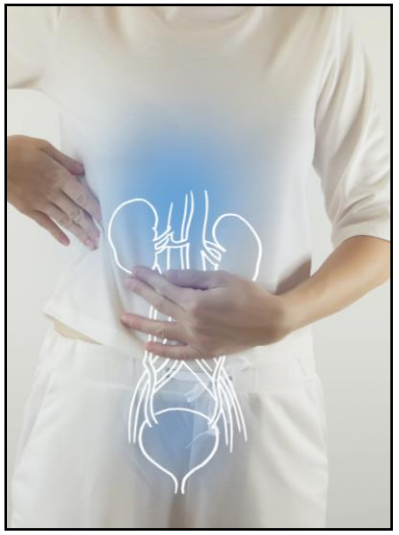
Individuals with IDD may exhibit the following symptoms, in addition to the symptoms experienced by the general population:

- A higher than normal temperature 98.6> is often one of the first signs of UTI in a non-verbal individual.
- Grabbing, pulling or holding their genitals or perianal area, more than usual or sudden onset.
- Increased irritability and agitation related to toileting or urinating (squirming, wiggling, grimacing, whining, crying, stiffening legs, etc.)
- Refusal to eat or drink, and/or poor appetite.
- New onset of bowel or urinary incontinence.
- Numerous repeated trips to the bathroom.
- Listlessness, and tiredness.

# Identifying UTI

# Diagnosing UTI

- **If UTI is suspected an individual should be seen by a physician right away, either by the primary care physician (PCP) or in the hospital emergency room, based on the increased risk of the infection developing into sepsis.**
  - Urinary tract infections are the second leading cause of sepsis, which if not treated immediately can quickly lead to death.
- Verification of UTI is based on the presence of bacteria and white blood cells in the urinary tract with the presents of physical symptoms.
- A person can have increased bacteria in their urine without having any physical symptoms.
  - This is referred to as Asymptomatic Bacteriuria (ASB), which is at times confused with UTI.



(Bonnici and Lentini, 2014; Givler and Givler, 2020).

# Identifying UTI's

- Collection of a mid-stream clean catch urine specimen is the first step in properly diagnosing and treating UTI's.
- It is important not to contaminate the urine specimen with bacteria from outside of the body when collecting a urine specimen.
- If time will allow, the best time to collect urine is in the morning, when the urine has been in the bladder for several hours.

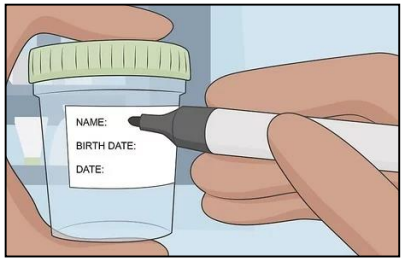
Male clean catch urine sample

Female clean catch urine sample

(Vorvick and Zieve, 2020).

# Identifying UTI's continued…

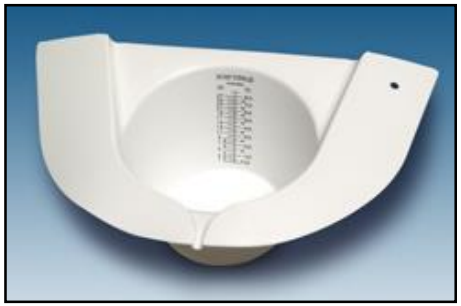
- A special urine collection kit should be obtained from the primary care physician's (PCP's) office to collect the specimen.
- In the kit there is a sample cup with lid and disinfecting wipes to be used to clean the perianal area before collection.
- Write the individuals last name and date of birth on the cup label with a permanent marker.
- Follow the specific step-by-step instructions in the kit for collecting a clean catch urine sample.
- Staff should wear gloves and remain with the individual to assist if needed, and to ensure a clean catch urine is obtained.


(Vorvick and Zieve, 2020).

# Identifying UTI's continued…

- Some individuals with I/DD are not cognitively able to follow verbal direction to obtain a clean catch urine specimen.
- If the individual is physically able to sit on the commode a specimen collection device or "toilet hat" can be inserted under the lid of the toilet to catch urine, then staff can fill the specimen cup with the urine.
- If needed ask the physician for the device, which can be obtained from most pharmacies.
- It is a one time use only device and must be thrown away after use.



(Latour et al., 2013; Cortes-Penfield et al., 2017).

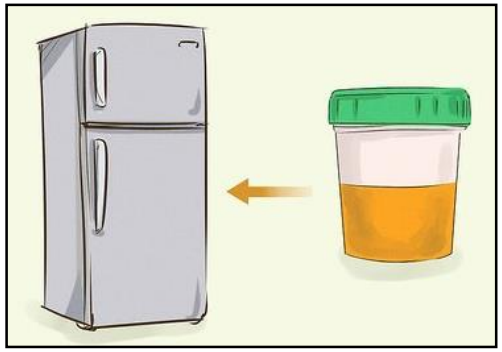
# Identifying UTI's continued…

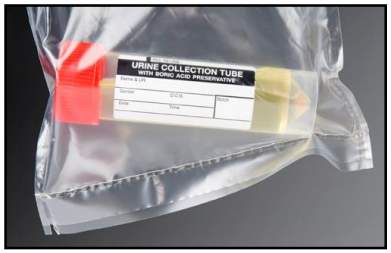
- Non-ambulatory individuals who cannot sit upright on the commode can use a specialized ultra-absorbent gel collection insert in an incontinence brief for urine sample collection.
- The urine is then drawn out of the insert and tested.
- The drawback to this process is it increases the risk of contamination and inaccurate results.
- The suggested "gold standard" method of urine specimen collection from an incontinent, non-ambulatory or non-compliant individual is to have a nurse perform a sterile in-out catheterization.
- A needle aspiration of the bladder is another option, if the individual is in a medical location where sedation is an option.

(Latour et al., 2013; Cortes-Penfield et al., 2017).

# Identifying UTI's continued…

- After the urine is collected, it should be returned to the primary care physician's (PCP) office or lab immediately if possible.
- If it cannot be returned immediately following collection, it can be stored in the refrigerator in a plastic baggy until the next earliest opportunity for delivery.
- If a urine sample is left at room temperature it will affect the bacterial growth in the urine and will require another urine specimen to be collected.






(Cortes-Penfield et al., 2017; Vorvick and Zieve, 2020).

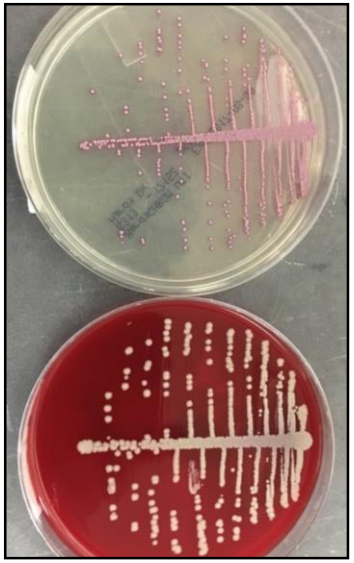
# Identifying UTI's continued…

- Complicated UTIs may involve more extensive testing to pinpoint the physical issue adding to the infection.
- Other procedures which might be required to treat a complicated UTI are:
  - Ultra-sounds.
  - Pelvic examination.
  - X-rays of the urinary tract.
  - Magnetic resonance imagining (MRI).
  - Computerized tomography (CT) scans.
  - A scope of the urinary tract (cystoscopy).

(Brubaker et al., 2018; Lajiness and Lajiness, 2019).

# Identifying UTI's continued…

- Identifying bacterial growth and white blood cells in the urine specimen is done using a dip-stick test (urinalysis) initially confirming infection.
  - A urinalysis (UA) examines the color and clarity, content and concentration of the urine.
- To identify the specific bacteria causing the infection a culture & sensitivity (C&S) test is required.
  - This test identifies the specific bacteria causing the infection and establishes which antibiotic will be most effective.
  - A C&S takes approximately 3 to 5 days to complete.
- A UA and C&S is recommended for recurrent and relapse UTIs to verify correct choice of antibiotic is being taken to fight infection and or length of treatment is effective.



(Brubaker et al., 2018; Lajiness and Lajiness, 2019).

# Care and Treatment of UTI

# Care of UTI's

- Antibiotics are prescribed to treat bacterial infections which cause UTIs with symptoms.
- Other medications such as Ibuprofen (Advil) and Pyridium (phenazopyridine) maybe prescribed to treat symptoms of pain, burning and itching
- Pyridium causes the urine to become bright orange to gold in color, and can stain bedsheets or clothing.


(Center for Disease Control and Prevention (CDC), 2020).

# Care of UTIs continued…

- Antibiotic treatment will be started immediately by the PCP based on the UA confirmation of infection and symptoms.
- If the UTI persists once the initial treatment has started, another antibiotic may be needed.
- The results of the C&S might indicate another antibiotic choice would be more effective.
- Antibiotic treatment can range from between 3 – 10 days depending on the individual's infection and the physician's prescription.
- It is so important to give antibiotic as soon as the medication is acquired.
  - Antibiotic medications should be taken exactly as prescribed until all of the medication is gone.
  - If a dose is missed, for whatever reason, it should be taken as soon as it is remembered, or skipped if it is close to time for the next dose.
  - If unsure, contact the pharmacy where the medication was obtained, or the prescribing physician for guidance.

(Brubaker et al, 2018; CDC, 2020).

# Care of UTI's continued…

- Within 24 – 48 hours of taking antibiotics signs and symptoms of UTI should begin to improve and the UTI should be completely gone after finishing the medication.
- If the UTI is not gone after taking the initial antibiotic treatment it is very important to notify the diagnosing physician for reevaluation immediately.
- If symptoms worsen or new symptoms appear such as:
  - Fever.
  - Chills.
  - Fast breathing or panting (tachypnea).
  - Fast heartbeat >100 (tachycardia).
  - **Take the individual to the emergency room immediately or call 911.**


- Any type of infection can progress into sepsis, but UTI's, with or without urinary catheterization, pose an increased risk of infection entering the bloodstream.

(Brubaker et al., 2018; Mitchell et al., 2019; CDC, 2020).

# Care of UTIs continued…

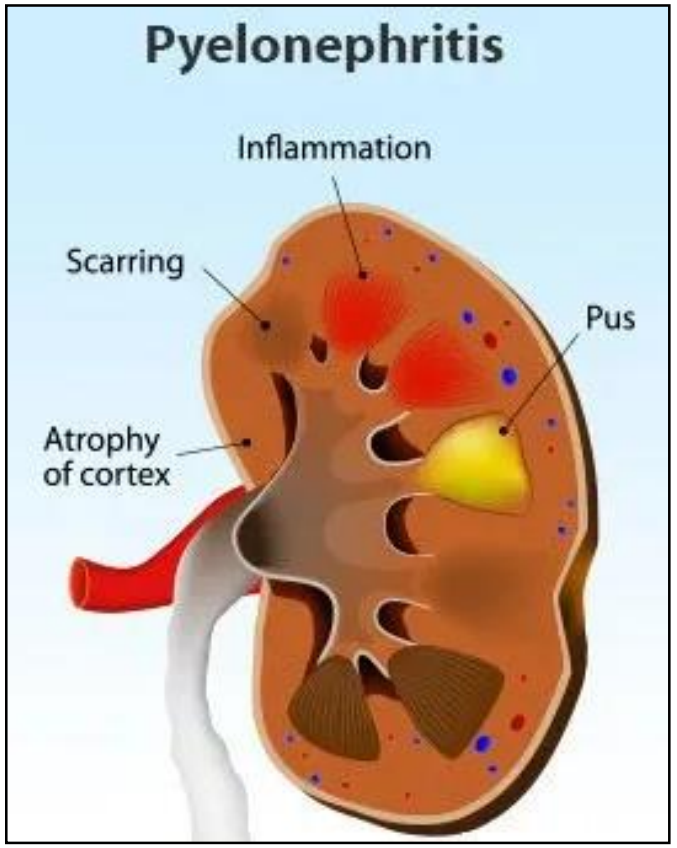
- Treatment of complicated UTIs may require surgical intervention, such as needle drainage and ultrasound shockwaves to clear obstructions like bladder stones.
- Antibiotic bladder irrigation is a treatment option available to individual's experiencing server recurrent UTIs.
- Individual's diagnosed with serious kidney infections may need to be hospitalized for IV antibiotic treatment  and or surgical intervention.

(Brubaker et al., 2018; Lajiness and Lajiness, 2019; Belyayeva and Leong, 2020).

# UTI Complications

# UTI Complications

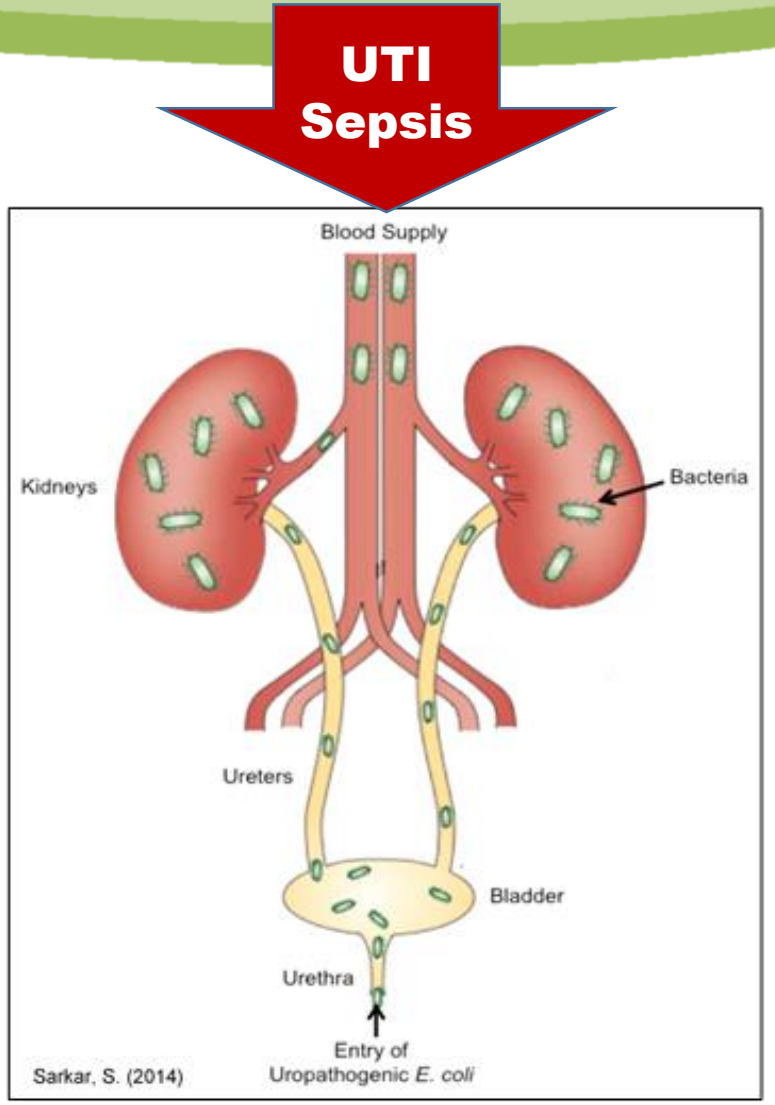
- The bacteria associated with urinary tract infections can cause:
  - Chronic kidney infections (pyelonephritis).
  - Permanent renal damage.
  - Serious antibiotic resistant complications such as *Clostridium difficile* (C.diff).




(Lajiness and Lajiness, 2019).

# UTI Complications continued…

- Urinary tract sepsis occurs when bacterial pathogens travel into the ureter, through the bladder, up the urethra into the kidney then out into the blood stream.
- Other serious complications include but are not limited to:
  - Renal abscess.
  - Renal vein thrombosis (blood clot).
  - Tissue death.
- If a UTI is left untreated, it can cause death in all age groups.
- Kidney failure leading to sepsis can result in death if there are no medical interventions provided.




(Flores-Mireles et al., 2015; Bonnici and Lentini, 2014; Belyayeva and Jeong, 2020).

# Prevention

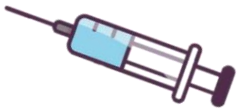
# UTI Prevention

- Educating individual's and caregivers regarding proper perianal hygiene is most effective in reducing UTIs.
- Staying well hydrated flushes bacteria from the body when urinating.
- Drinking adequate amounts of non-caffeinated fluids assists the bladder muscles in remaining firm and healthy to evacuate urine from the body completely.
- Low dose preventative antibiotics have been shown to lower risk of future UTIs.
- Preventative antibiotics are usually prescribed for three months to one year for individuals who suffer from chronic recurrent UTIs.

(Hooton, 2012; Brubaker et al., 2018; Lajiness and Lajiness, 2019; Belyayeva and Jeong, 2020).

# UTI Prevention continued…

- Women who have low estrogen levels are sometimes prescribed vaginal estrogen cream to decrease UTI reoccurrence.
- Performing proper catheter care hygiene on a regular basis as prescribed by a physician, and maintaining scheduled replacement appointments has been shown to lowers the risk of CAUTI in individuals with indwelling urinary and or suprapubic catheters.
- Regular review of the individual's underlying health conditions requiring an indwelling catheter, with a possible treatment change to periodic catheterization, if possible, may be the best way to reduce risk of CAUTI's.
- Pharmacy research is working on developing a vaccine, currently in clinical trials, which would target and reduce E.coli bacteria growth in the urinary tract.



(Flores-Mireles et al., 2015; McLellan et al., 2016; Cortes-Penfield et al., 2017; Lajiness and Lajiness, 2019).

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# Caregiver Considerations

# Caregivers Considerations

- While an individual is being treated with antibiotics it is important to be aware of other flora and fauna imbalances which could produce secondary infections, such as yeast infections and persistent diarrhea.
- Seek assistance from the individuals PCP if concerns arise regarding antibiotic treatment.
- If the individual has a history of C. diff or MRSA, as a result of antibiotic treatment, be sure to inform the prescribing physician.


(CDC, 2020).

# Caregiver Considerations continued…

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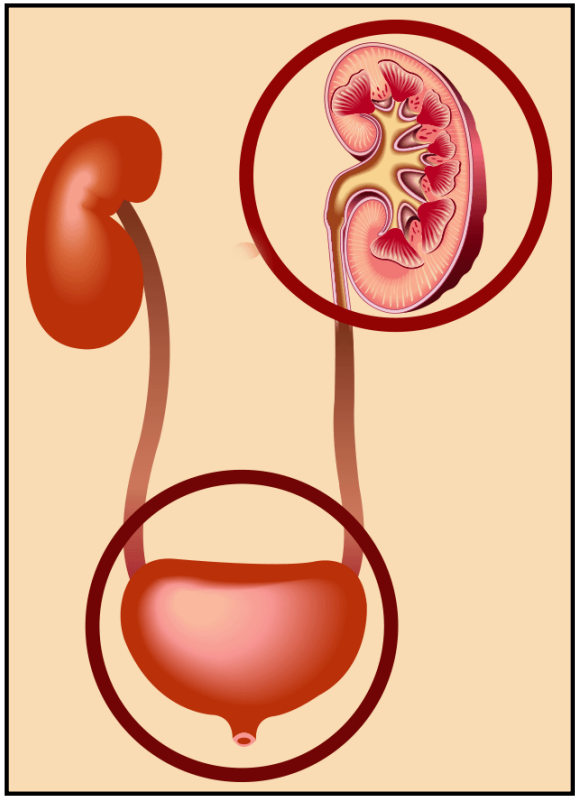
- For individuals with diabetes of either type 1 or type 2, a diagnoses of UTI requires special caregiver considerations and observation.
- Caregivers should be aware of the increased risk of acute kidney infection UTI and septic shock.
- If signs and symptoms of UTI are suspected in an individual with diabetes they should be examined by their PCP immediately.
- If the individual's PCP is unavailable on the day you call for an appointment, the individual should be examined in an emergency room immediately.

# Review

# Let's Review

- What is a urinary tract infection (UTI's).
- The different types of UTI's.
- How are UTI's classified.
- The risk factors for getting a UTI.
- The causes of UTI's.
- Signs and symptoms of UTI's.
- When to get medical attention.
- How to get a clean catch urine sample.
- Increased danger of undiagnosed UTI's.
- Treatment of a UTI.



Virginia Department of Behavioral Health & Developmental Services

# Thank You !

# Resources

- **The Office of Integrated Health at DBHDS:** If you have any questions about the information contained in this Health & Safety Alert, or need additional resources or support, please email your questions to the Office of Integrated Health's nursing team at: communitynursing@dbhds.virginia.gov
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- **The Office of Women's Health at womenshealth.gov a division of the U.S. Department of Health & Human Services:** https://www.womenshealth.gov/a-z-topics/urinary-tract infections#:~:text=UTIs%20are%20treated%20with%20antibiotics,after%20a%20day%20or%20two
- **The Center for Disease Control and Prevention:** https://www.cdc.gov/antibiotic-use/community/for-patients/common-illnesses/uti.html

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